

Year 3 Review
Brussels, December 14th, 2007

Status and Long Term Objectives

NoE Scientific Management

Joseph Sifakis, Bruno Bouyssounouse

Verimag

Agenda

9:00	Project Officer's Introduction / Announcements <i>David Khan (European Commission)</i>
	<ul style="list-style-type: none"> ▶ News ▶ Upcoming Calls / Events
NoE Management	
9:10	Long-term Objectives and Status <i>Scientific Coordinator: Joseph Sifakis (UJF/VERIMAG)</i>
	<ul style="list-style-type: none"> ▶ Integration of the area (core, affiliated teams) ▶ Building Excellence ▶ New CDC representative
Real-Time Components Cluster	
9:30	Achievements and Perspectives <i>Cluster leader: Bengt Jonsson (Uppsala)</i>
	<ul style="list-style-type: none"> ▶ Overall Aims and Achievements ▶ Overview of Scientific Highlights in Y3 ▶ Work planned in Y4
Adaptive Real Time Cluster	
10:10	Achievements and Perspectives <i>Cluster leader: Giorgio Buttazzo (Sant'Anna - Pisa)</i>
	<ul style="list-style-type: none"> ▶ Overall Aims and Achievements ▶ Overview of Scientific Highlights in Y3 ▶ Work planned in Y4
	<i>Activity: Dynamic and Pervasive Networking</i>
11:00	break
Compilers and Timing Analysis Cluster	
11:10	Achievements and Perspectives - Compilers <i>Cluster leader: Peter Marwedel (Dortmund)</i>
	<ul style="list-style-type: none"> ▶ Overall Aims and Achievements ▶ Overview of Scientific Highlights in Y3 ▶ Work planned in Y4
	Achievements and Perspectives - Timing Analysis <i>Cluster leader: Björn Lisper (Malardalen)</i>

Execution Platforms Cluster	
11:50	Achievements and Perspectives <i>Cluster leader: Jan Madsen (DTU)</i>
	<ul style="list-style-type: none"> ▶ Overall Aims and Achievements ▶ Overview of Scientific Highlights in Y3 ▶ Work planned in Y4
12:30	Lunch (on-site)
Control for Embedded Systems Cluster	
13:40	Achievements and Perspectives <i>Cluster leader: Karl-Erik Arzen (Lund)</i>
	<ul style="list-style-type: none"> ▶ Overall Aims and Achievements ▶ Overview of Scientific Highlights in Y3 ▶ Work planned in Y4
Testing and Verification Cluster	
14:20	Achievements and Perspectives <i>Cluster leader: Kim Larsen (Aalborg)</i>
	<ul style="list-style-type: none"> ▶ Overall Aims and Achievements ▶ Overview of Scientific Highlights in Y3 ▶ Work planned in Y4
Global NoE Aspects	
15:00	Spreading Excellence
	<ul style="list-style-type: none"> ▶ Vision: Long-term impact ▶ Implementation: Year 3 Events ▶ Year 4 Perspectives ▶ Transition to ArtistDesign
	<i>Technical Coordinator: Bruno Bouyssounouse (UJF/Verimag)</i>
Reviewer's Meeting	
15:20	Reviewer's Meeting
	Conclusions and Feedback <i>Project Officer and Reviewers</i>
16:30	Closing

Embedded Systems Design

Building embedded systems of guaranteed functionality and quality, at an acceptable cost, is a major technological and scientific challenge.

The challenge is to produce theoretical and practical tools, which allow system-centric design approaches, with high:

- *Optimality of the overall product for its intended market segment*
cost and time to market, quality/safety/security//reliability/dependability, use of resources (energy, bandwidth, processor, memory, etc)
- *Interactability in the embedded system environment*
access to all available resources via seamless interaction, cooperating and concurrent devices/applications

This requires a multi-disciplinary approach, integrating competencies covering the whole spectrum of activities in system development

Objectives

Reinforce and strengthen scientific and technological excellence in Embedded Systems Design:

- The NoE will act as a Virtual Center of Excellence
- **Two levels** of integration to create critical mass from selected European teams
 - **Strong integration** within selected topics by assembling the best European teams, to advance the state of the art in the topic.
 - **Integration between** topics to achieve the multi-disciplinary excellence and skills required for the development of future embedded technologies.
- Integration will be around a Joint Programme of Activities

	Short Name	Full Name and Country	Key researchers
1	CDC	Caisse des Dépôts et Consignations (France)	None
2	UJF/ Verimag	University Joseph Fourier / Verimag (France)	Paul Caspi, Susanne Graf, Nicolas Halbwachs, Yassine Lakhnech, Oded Maler, Joseph Sifakis
3	Aachen	RWTH Aachen (Germany)	Rainer Leupers
4	Aalborg	BRICS – Aalborg University (Denmark)	Kim Larsen, Anders Ravn
5	AbsInt	AbsInt Angewandte Informatik GmbH (Germany)	Christian Ferdinand
6	Aveiro	University of Aveiro (Portugal)	Luis Almeida
7	Cantabria	Universidad de Cantabria (Spain)	Michael Gonzalez Harbour
8	CEA	Commissariat à l'Énergie Atomique – Laboratoire LIST (France)	François Terrier
9	CFV	Centre Fédéré en Vérification, Université de Liège (Belgium)	Pierre Wolper
10	Czech TU	Czech Technical University (Czech Republic)	Vladimir Kucera
11	Dortmund	Dortmund University (Germany)	Peter Marwedel
12	DTU	Technical University of Denmark (Denmark)	Jan Madsen
13	ETHZ	Swiss Federal Institute of Technology – Zurich (Switzerland)	Lothar Thiele, Manfred Morari
14	FTR&D	France Telecom R&D	Pierre Combes, Kathleen Milsted
15	INRIA	Institut National de Recherche en Informatique et Automatique (France)	Albert Benveniste, Benoit Caillaud, Alain Girault, Thierry Jéron, Jean-Marc Jézéquel, Paul Le Guernic, Eric Rutten, Yves Sorel, Robert de Simone
16	KTH	Royal Institute of Technology (Sweden)	Martin Törngren
17	Linköping	Linköping University (Sweden)	Petru Eles
18	LSV / CNRS	Centre National de la Recherche Scientifique / Laboratoire LSV (France)	Michel Bidoit, Hubert Comon, Philippe Schnoebelen

Core Partner	Short Name	Full Name and Country	Key scientists
19	Lund	Lund University (Sweden)	Karl-Erik Årzén
20	Mälardalen	University of Mälardalen (Sweden)	Björn Lisper
21	OFFIS	Kuratorium OFFIS e. V. (Germany)	Werner Damm, Bernhard Josko
22	PARADES	PARADES EEIG (Italy)	Alberto Sangiovanni Vincentelli
24	UP Madrid	Universidad Politecnica de Madrid (Spain)	Juan de la Puente
25	Saarland	Saarland University	Reinhard Wilhelm
26	STM	ST Microelectronics	Christian Bertin
27	Eindhoven	Technical University of Eindhoven (Netherlands)	Martin Rem
28	TU Vienna	Technical University of Vienna (Austria)	Hermann Kopetz, Peter Puschner, Philipp Petti
29	TUBS	Technical University Braunschweig (Germany)	Rolf Ernst
30	Twente	University of Twente (Netherlands)	Ed Brinksma
31	UoB	University of Bologna (Italy)	Luca Benini
32	Uppsala	Uppsala University (Sweden)	Bengt Jonsson
33	UPVLC	Universidad Polytecnica de Valencia (Spain)	Alfons Crespi
34	York	University of York (UK)	Guillem Bernat, Alan Burns, Iain Bate, Andy Wellings
35	Porto	Polytechnic of Porto	Eduardo Tovar
36	EPFL	Ecole Polytechnique Fédérale de Lausanne	Tom Henzinger
37	Pisa	Scuola Superiore Sant'Anna (Pisa)	Giorgio Buttazzo
38	Ace	Ace	Joseph Van Vlijmen
39	Tidorum	Tidorum	Niklas Holsti
40	Kaiserslautern	University of Kaiserslautern	Gerhard Fohler

Real Time Components

Bengt Jonsson – Uppsala
Albert Benveniste – INRIA
Alberto Sangiovanni – PARADES
Paul Caspi – Verimag
Hermann Kopetz – TU Vienna
Werner Damm – OFFIS
François Terrier – CEA/LIST
Jean-Marc Jezequel – INRIA
Susanne Graf – Verimag
Tom Henzinger - EPFL

Adaptive Real-time

Giorgio Buttazzo – Pisa
Alan Burns – University of York
Michael Gonzalez - Cantabria
Luis Almeida – Aveiro
Gerhard Fohler – Kaiserslautern
Juan de la Puente – Polytechnic de Madrid

Testing & Verification

Kim Larsen - Aalborg/ CISS
Ed Brinksma – Twente/Eindhoven
Pierre Wolper – Centre Fédéré de Verification
Michel Bidoit - LSV
Thierry Jeron - INRIA

Control for Embedded

Karl-Erik Arzen – Lund
Martin Torngren – KTH
Alfons Crespo – UP Valencia
Vladimir Kucera - Czech TU

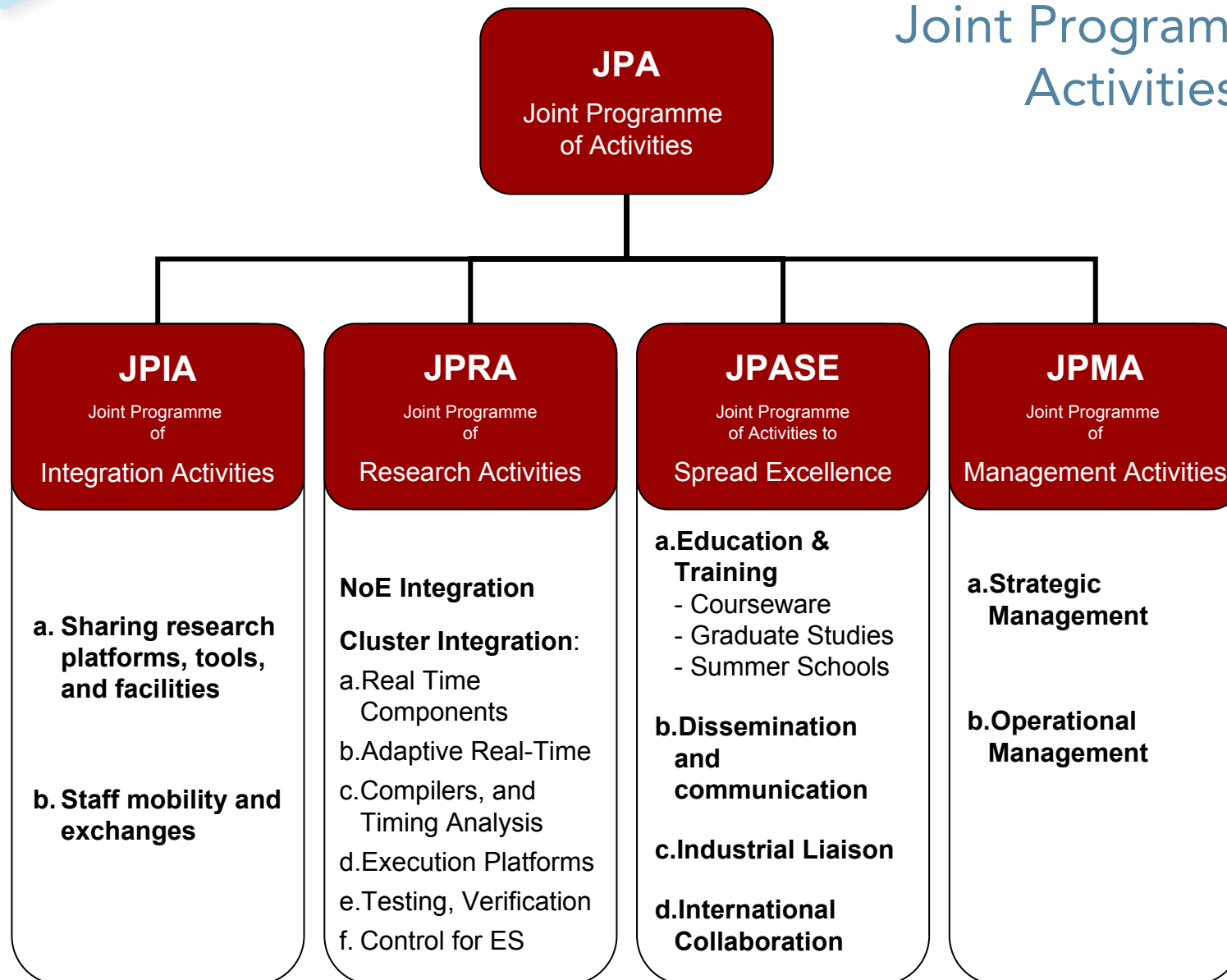
Compilers and Timing Analysis

Reinhard Wilhelm - Saarland
Rainer Leupers - Aachen
Christian Bertin – ST Microelectronics
Christian Ferdinand – AbsInt
Peter Marwedel - Dortmund
Puschner, Krall – TU Vienna
Bjorn Lisper –Maalardalen
Guillem Bernat – University of York
Joseph van Vlijmen – Ace
Niklas Holsti – Tidorum
Sabine Glesner – TU Berlin

Execution Platforms

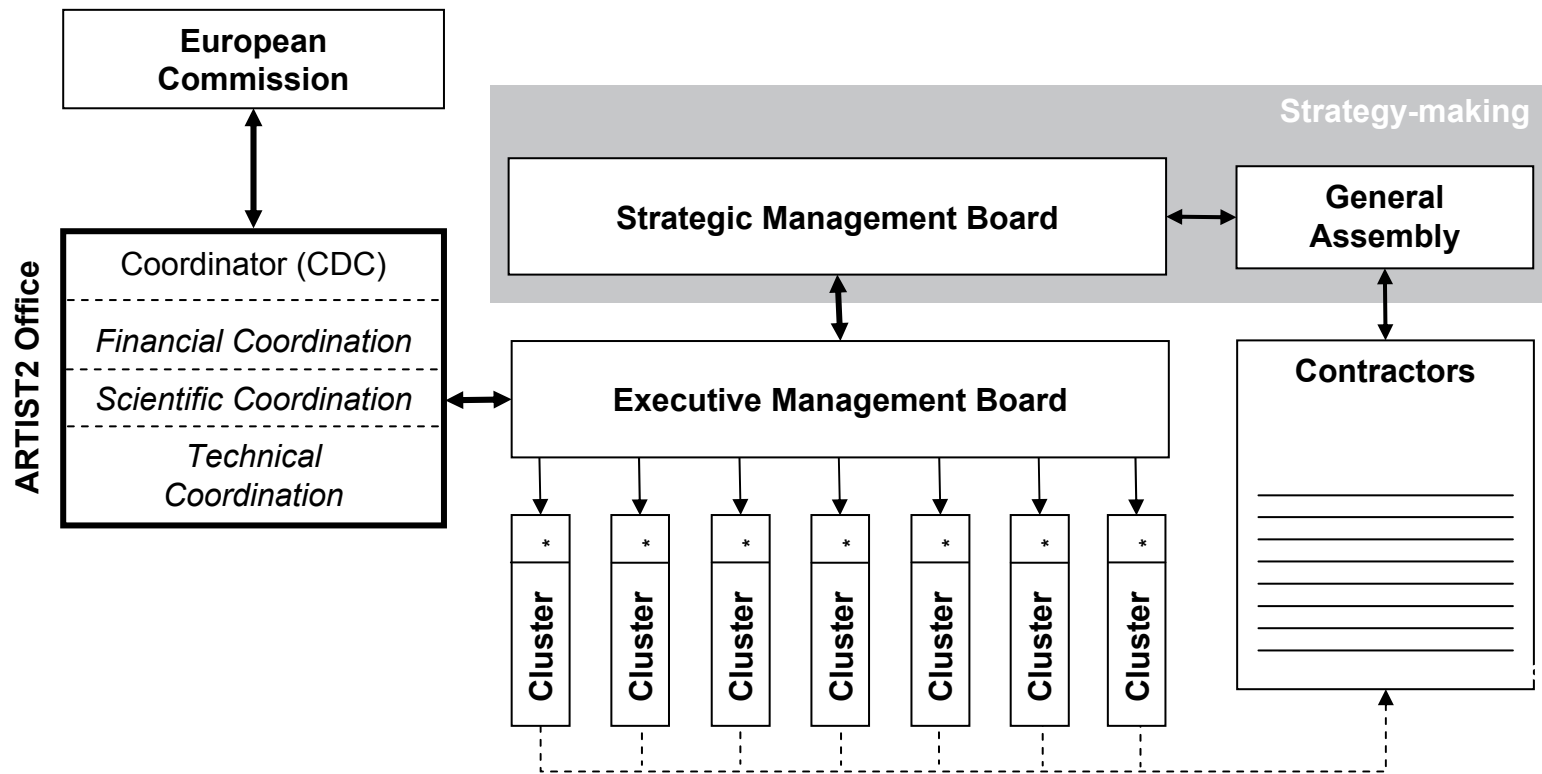
Lothar Thiele – ETH Zurich
Jan Madsen –DTU (TU Denmark)
Luca Benini – UoB
Petru Eles – ESLAB/Liu
Rolf Ernst – UBR
Josef Hooman - Eindhoven

Joint Programme of Activities



Management Structure

Joint Programme of Management Activities (JPMA)



Budget Distribution – Year 3

CDC	56 875,00 €	INRIA	55 497,00 €	TUBS	34 528,00 €
UJF/Verimag	183 637,00 €	KTH	49 904,00 €	Twente	26 303,00 €
Aachen	44 881,00 €	Linkoping	36 184,00 €	Bologna	41 123,00 €
Aalborg	46 490,00 €	CNRS	20 986,00 €	Uppsala	76 945,00 €
Absint	24 386,00 €	Lund	65 005,00 €	UPVLC	50 007,00 €
Aveiro	18 169,00 €	Malardalen	13 926,00 €	York	29 660,00 €
Cantabria	21 199,00 €	OFFIS	17 226,00 €	Porto	18 170,00 €
CEA	33 800,00 €	PARADES	26 162,00 €	EPFL	39 329,00 €
CFV	19 686,00 €	Pavia	3 028,00 €	Pisa	76 584,00 €
Czech	41 834,00 €	Madrid	39 366,00 €	ACE	18 211,00 €
Dortmund	28 918,00 €	Saarland	36 346,00 €	Tidorum	8 461,00 €
DTU	41 124,00 €	ST	15 925,00 €	KaiserSlautern	21 988,00 €
ETHZ	52 565,00 €	Eindhoven	18 493,00 €	TU Berlin	19 125,00 €
FTRD	13 752,00 €	Vienna	45 836,00 €		

Budget Distribution by Cluster

RTC	ART	Compilers TA	Exec Platforms	Control	T&V	Non- Cluster
21%	13,9%	14,5%	13,7%	11,8%	11,7%	13,0%

Non-Cluster : 7% Management + 6% Spreading Excellence

An additional 6% Spreading Excellence is controlled by the clusters

Reviewers Recommendations

Recommendation 1. Policy for Y3 deliverables

- All technical deliverables should be available on the ARTIST2 web site by 30 September 2007. - OK
- All technical deliverables available on the ARTIST2 web site by 30 September 2007 will be pre-assessed by the reviewers by 15 October 2007. **received 30 October**
- All technical deliverables MUST be available on the ARTIST2 web site by 15 October 2007 - OK
- All technical deliverables NOT available on the ARTIST2 web site by 15 October 2007 are REJECTED. - OK
- All management deliverables MUST be available on the ARTIST2 web site by 15 October 2007. **Extension due to a later review date**
- If any management deliverables are NOT available on the ARTIST2 web site by 15 October 2007, the review meeting is CANCELLED. **OK with the extension**

Reviewers Recommendations

Recommendation 2: Deliverables

The 18-month plan document must be modified and resubmitted as soon as possible, no later than 30 January 2007. - OK

Recommendation 3: Activity leader change

Reviewers understand that there are circumstances pushing to replace an activity leader. The management of the project should take care to ensure continuity. - OK

Recommendation 4: Demos and demonstrators

Reviewers appreciated demonstrators like the “pig” project and the “lego” one. The use of demos and demonstrator should be encouraged. - OK

Reviewers Recommendations

Recommendation 5: Deliverables under web format

Deliverables like D6 and D7 should be provided on the WEB to the benefit of everybody. The planning of the next period should incorporate this kind of format. - OK

Recommendation 6: Peer review of deliverables

Put a deliverables quality assurance process in place before the next review. For example, deliverables from one cluster could be reviewed by someone in another cluster. - OK

Recommendation 7: Metrics on impact

In order to assess the impact of ARTIST2, a number of metrics have been defined in the DoW. The project managers need to take a careful look at these and other relevant metrics and start to quantify them. A brief presentation on this topic is expected at the next review. The reviewers recommend that a calculation of the budgets (EC – national etc.) of projects “around” ARTIST2 should be done.

Management of the NoE

We believe that the current two-tiered Management structure - dividing the management amongst cluster leaders and the Strategic Management Board composed of both cluster leaders and a limited number of other selected prominent core partners – is the right one for managing such a large research entity. It provides the right combination of flexibility and accountability, while leaving room for innovation and evolution.

The refined reporting procedures and monitoring are working well.

Inter-cluster Integration

QoS Aware Components (ART&RTC)

- Collaboration between UPM, CEA and Thales the topics, in particular through meetings in the context of the OMG.
- The Artist2 partners have played a central role in the organisation of three international workshops on QoS-Aware components, and the MARTE standard.

Quantitative Testing and Verification (TV&RTC)

- Intense exchanges between the partners, including visits of researchers, Post-Docs, and PhD students.
- Many joint publications, and contributions to schools and workshops through invited presentations.

Inter-cluster Integration

Resource-aware Design (EP&CTA)

- Collaboration between Bologna, Aachen and Dortmund (use of the LISATek tools both for behavioural description and for RTL generation of the VLIW processors)
- Bologna and Dortmund have discussed compiler architecture and the two-step compilation approach (source-to-source parallelization followed by code generation). based on previous experience in Dortmund, they agreed to using a similar approach for memory-aware compilation.
- ETH Zurich has given a PhD course at DTU on formal methods for embedded systems, especially for resource-aware design. In addition, there was much interaction during the workshops organized and co-organized by ETH Zurich.

Inter-cluster Integration

Adaptive Real-time, HRT and Control (Control&ART&RTC)

- There have been numerous collaborations between the partners in the activity and with several affiliated partners.
- Integrating feedback control schemes into the Shark operating system (used as a shared platform) and investigating the effects of different scheduling policies on delays and jitter in control loops.
- The teams were also quite active in disseminating the results through workshops, scientific publications and summer schools, such as the “First European Laboratory on Real-Time and Control for Embedded Systems”, in Pisa, June 10-14 2006.

Cluster Integration

Real Time Components

- We have seen a strong degree of integration on Component-based Design, between teams at INRIA, OFFIS, PARADES and VERIMAG, through the active participation of the SPEEDS IP project, and subsequently the COMBEST STREP project.
- A further sign of integration is the work for the development of the MARTE standard, that takes into account results from teams in the cluster.
- The cluster has organised two successful workshops, in collaboration with the Testing and Verification and the Control clusters. The first one took place at DATE 2007 and the second at CAV 2007.
- The cluster has produced joint publications on significant research results, in particular regarding fundamental problems in Component-based Design (work by EPFL, Verimag, as well as INRIA, PARADES, VERIMAG).

Cluster Integration

Adaptive Real Time

- In Y3, all partners actively contributed to the progress of the research activities planned by the cluster. Affiliated partners also gave a substantial contribution by attending meetings, workshops, by participating in joint publications and by exchanging human resources.
- A tangible sign of progressing integration is the emergence of new projects focusing on Adaptive Real Time, in collaboration with other clusters.
- The ART cluster has contributed to creating the necessary critical mass to set up the FRESCOR EU project that started in June 2006 and coordinated by University of Cantabria. Many of the ART partners involved in the activity on flexible scheduling are also partners of the project. This is an excellent situation in which the FRESCOR project can benefit from the ARTIST2 NoE expertise, and the network can benefit from being able to influence the project, and from being able to exploit its results.
- Other two consortia were formed thanks to the ARTIST2 network, which made two project proposals that are still in phase of preparation, PREDATOR (coordinated by University of Saarlandes) and QUAEST (coordinated by Philips Research), both involving several members of the network.
- A new activity on real-time languages (led by University of York) was started and a series of workshops and meetings were organized. This is proving a successful way of coordinating a broad base of research on different languages taking place at a number of institutions.
- The work on networks has reached significant results, regarding evolution of the Flexible Time Triggered (FTT) framework, as well as the design, analysis and implementation of protocols, mechanisms and paradigms for wireless sensor networks (WSN).

Cluster Integration

Compilers and Timing Analysis

- Work on common formats, in particular definition of the ARTIST Interchange Representation (AIR).
- Strong collaboration between Dortmund, AbsInt and the Universities of Bologna, Linköping. Future opportunities include a commercialization of results
- The work revolving around the CoSy platform, mainly involving partners ACE, Aachen, and Berlin can be regarded very successful. The cooperation has led to various student exchanges, joint master theses, papers, public demonstrations and SW prototypes
- Collaboration between Dortmund University and IMEC on the definition of a common roadmap on research for MPSoC memory management.
- The organization of the SCOPES 2007 Workshop on Software and Compilers for Embedded Systems by Dortmund University supported by Artist2 led to the publication of 12 papers of very high quality.

Cluster Integration

Execution Platforms

- There has been substantial progress in integrating different research directions and view points. Indicators that show this clearly are (a) the joint participation in summer schools, workshops and tutorials and (b) the number and quality of joint publications, and (c) the integration of tools.
- The cluster report provides an impressive and detailed list of interactions, between the cluster partners, and the associated results.
- This cluster plays a pivotal role for overall integration within the NoE. In particular, it participates in 2 main STREP projects: COMBEST (with the Real Time Components cluster), and PREDATOR (with the Timing Analysis and Compilers cluster).

Cluster Integration

Control for Embedded Systems

- The amount of joint research and publications continues to be high, although not as high as during last year.
- Graduate schools, the international workshop, and the different presentation at ARTIST2 events given by members of the cluster.
- Strong interaction with the ART cluster
- The PhD student mobility between the partners is still low.

Cluster Integration

Testing and Verification

- True excellence within the area clearly demonstrated by the (very) extensive lists of publications at leading scientific conferences and journals, thus demonstrating
- Work on Quantitative Testing and Verification has been excellent. It also provides the theoretical foundation for the development of methods and tools implemented in the Testing and Verification Platform. Within this activity the objectives related to the individual tools, their advancement and dissemination has been fully accomplished.
- Very good work on security – no integration with the rest of the activities
- The objective of designing a joint infrastructure for a European Verification Grid has not been pursued during this third year

Artist2 Integration - Platforms

Component Modelling and Verification - Real Time Components

- Good progress on modelling languages and semantic frameworks and their implementations with tools for MARTE and HRC (common format for the SPEEDS IP)
- There is an appreciable volume of high-quality results, but there remains some dispersion, due to the wide variety of languages and models.

Common Infrastructure for Adaptive Real-time Systems - Adaptive Real Time

- Algorithms, tools and teaching activities around the Shark kernel
- Participated in the evolution of RTOS standards, by introducing advanced scheduling e.g. for OSEK compliant kernels.

Compilers and Timing Analysis

- *Timing Analysis platform*

Development of common representation formats for the various analysis tools such as the ARTIST Interchange Representation (AIR), ALF for Computation Semantics Representation, and SWEET.

Progress on the integration of tools by using these formats; new analysis techniques
Organising the WCET Challenge 2006

- *Compilers platform*

Tools and infrastructure for taking execution times into account in the compilation process
Optimization, retargeting, and verification techniques for Compilers. • An External Program Representation for Tool Interoperability.

Artist2 Integration - Platforms

Execution Platforms

- Extend the simulation-based modeling to address issues of dynamically reconfigurable architectures, distributed embedded systems, and lab-on-a-chip (Bolgna, DTU).
- Model integration, using timed automata models, and to extend current models to address and encompass more hardware issues.
- Impressive list of the results described in detail in the platform deliverable

Control for Embedded Systems

- TrueTime simulation toolbox, and its improvement in a number of directions. Wide distributed and used (1,000 – 1,500 users over the course of the year), in particular in the RUNES IP
- The TORSCHÉ Scheduling Toolbox for Matlab has been extended, with new scheduling algorithms, and integrated with TrueTime.
- Model-based embedded systems engineering: model transformations between UML, Simulink and safety analysis tools - workshops in conferences such as DATE and CAV.

Testing and Verification

- Development of existing and new tools: STG - testing (IRISA), CATS compositional performance analysis (UPPSALA), improving UPPAAL, UPPAAL Tron - online testing (AALBORG), DeadlockFinder (VERIMAG)
- Major effort into the development of tools to support parallel verification of complex embedded systems.
- Evaluation of tools: industrial case studies by OFFIS, Twente, Aalborg, Uppsala documented via scientific papers, disseminated through the open repository for Artist2 Test and Verification

Spreading Excellence

Overall objective is the emergence of Embedded Systems Design as a scientific discipline. This objective is pursued within the international scientific and industrial community.

This is implemented in 3 levels:

- **International Collaboration**
 - High-level meetings (NSF/IST),
 - International Schools (eg: China school, SouthAmerican school)),
 - support for selected conferences (eg: Embedded Systems Week)
- **European level**
 - Direct organisation of top workshops and schools
 - Support for existing workshops, schools (eg: FOSAD) and conferences (eg: DATE)
 - Industrial Liaison (ARTEMIS, triggering projects and promoting standards)
- **Affiliated Partners**
 - Direct involvement in the workprogramme (technical meetings).

Key Points : The NoE works!

We have overcome initial difficulties

- Financial and Technical reporting has been streamlined
- We believe that the consortium and affiliates now understand and adhere to the principle: Artist2 provides support for integration, structured by a JPA mainly funded by external resources. Nevertheless, our excellence is evaluated on the basis of this JPA.

End Results – Integration within the NoE

Within the NoE, we have achieved a strongly integrated community, recognised internationally that has a significant impact on European R&D on Embedded systems.

Strong convergence between attested by joint projects, publications, exchange of personnel:

- Real Time Components + Testing and Verification
+ Execution Platforms
- Adaptive Real Time + Control for Embedded Systems
- Execution Platforms + Compilers and Timing Analysis

End Results – ARTEMIS/ARTEMISIA

- CEA and U Bologna are members of the Steering Board of ARTEMISIA
- Verimag is the chair of ARTEMISIA's Chamber B
- Active participation in WGs for the definition of the ARTEMIS SRA
- Very active role in setting up the EICOSE (European Institute for COMplex and Safety Critical Embedded Systems Engineering) Cluster of Excellence - CEA, INRIA, OFFIS
- Exploring possibilities for setting up other European Clusters of Excellence

Artist2's Integration of the Area

Artist2 acts to integrate the area of Embedded Systems Design, and promote the emergence of the discipline:

- Artist2 will again be organizing three major Summer Schools this year:
 - A European school, this year in France (probably near Grenoble)
 - A China school, in Beijing
 - A SouthAmerican school
- Organization of major conferences (Embedded Systems Week, Date, RTSS) as well as in IEEE and the ACM.
- International Collaboration activities (high-level meetings and schools)
- Triggering important R&D projects (national and European)
- Many teams play a leading role in their own countries, by participating in setting up and leading national centers of excellence and major projects.
- The European embedded systems community is now a reality, through a structured constituency, as attested by strong presence in conferences, and significant interaction at all levels.

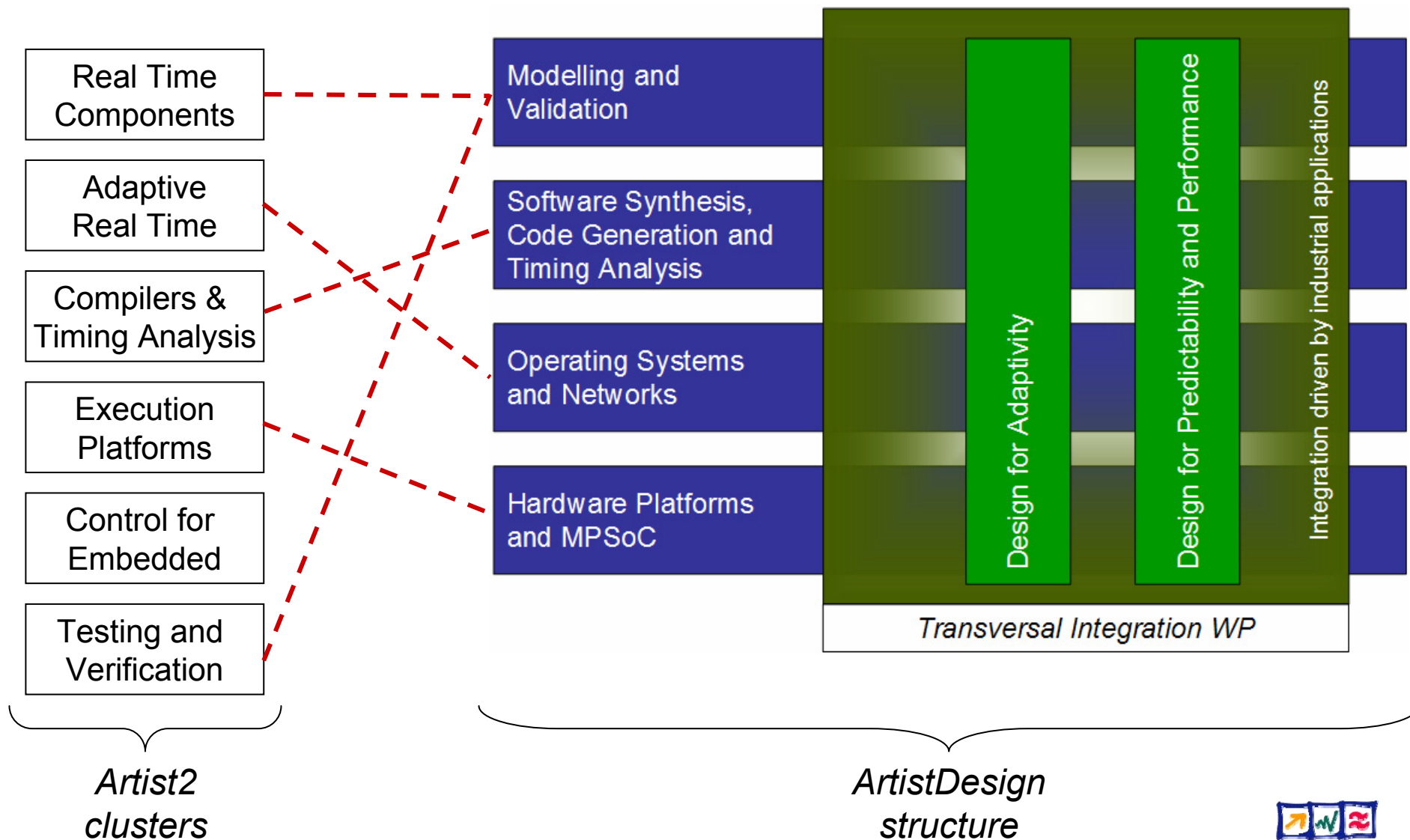
Synergy with recent STREP projects

The recent FP7 call has been quite successful. We have at least the following STREP projects approved, with strong Artist involvement and leadership:

- ACTORS - Adaptivity and Control of Resources in Embedded Systems
- ALL-TIMES - Integrating European Timing Analysis Technology
- COMBEST - COMponent-Based Embedded Systems design Techniques
- EMUCO - Embedded Multi-Core
- JEOPARD - Java Environment for Parallel Realtime Development
- MNEMEE - Memory management technology for adaptive and efficient design of ES
- PREDATOR - Design for Predictability and Efficiency
- Quasimodo - Quantitative System Properties in Model-Driven Design of Embedded Systems

We are examining possibilities for setting up synergies between the ArtistDesign NoE and these STREP projects.

Evolution: tighter integration in ArtistDesign



Proposed Changes for Y4

In Year 3, we have not had any major management difficulties, and the main focus of interest has been on the Research (JPRA) and Spreading Excellence (JPASE) activities.

Nonetheless, we plan to implement the following leadership changes for Year 4, that reflect the natural evolution of the NoE:

- Cluster leader for Compilers and Timing Analysis is now Peter Marwedel (Dortmund).
- Activity leader for the Timing Analysis Platform is now Bjorn Lisper (Malardalen).
- Activity leader for the Compilers Platform is now Peter Marwedel (Dortmund).
- Cluster leader for Execution Platforms is now Jan Madsen (DTU).